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## Infectious Abortion of Cattle and its possible Relation to Human Health.*

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Gentlemen,—This meeting of the Southern Rhodesia Veterinary Association has been convened in order that its members may again discuss the very serious disease of cattle known as "Infectious, Contagious or Epizootic Abortion," which since our last meeting has assumed alarming proportions in this country; and in view of the recent suggestion that the disease may be infective to man, the members of the medical profession have been invited to assist in our deliberations.

The close association and interdependence of our two professions is daily becoming more noticeable, especially in tropical and sub-tropical countries where the diseases of man and animals are so closely allied. Undoubtedly the best and most scientific manner of studying such diseases is from the comparative standpoint, and the subject of my paper to-night affords an example of the necessity for co-operation between us.

For my part I have to bring before you certain aspects of the disease as it occurs among animals in this territory, but in the course of my remarks I may throw out hints which it is hoped may prompt the members of our sister profession to enter into the debate and to bring forward any information they possess having a bearing upon the disease as it affects the human population of this Colony.

There is no doubt that the future prosperity of Rhodesia principally depends upon the progress of the pastoral industry, but it is sad to relate that since the advent of the white man the herds of this country have twice been decimated by bovine scourges. On the arrival of the pioneers it is said that the country was "rolling with cattle," but in 1896 the greater number of them was destroyed by rinderpest, which passed through this country on its way to the South. Notwithstanding this disaster the survivors, in the words of the Bible, brought forth their thousands and tens of thousands, until the industry was again upon a sound footing, only to be again destroyed by East Coast fever, which arrived in 1901, and has only recently yielded to the scientific efforts of the Veterinary Department.

At the present time it is officially stated that there are about one and a half million head of cattle in the country, owned equally by black and white; but, alas, the industry is again threatened with a new disaster in the appearance of this insidious and costly malady known as infectious abortion, a disease which is now known to exist in all parts of the territory.

The first outbreak recorded in this country was in a dairy herd in Salisbury in 1906. This was promptly and vigorously dealt with, and was apparently stamped out. Although abortions undoubtedly continued to occur, they were not reported to the Veterinary Department, and it was impossible to determine whether infectious abortion as a specific disease was the cause of them until 1914, when the agglutination test was first applied as an aid to diagnosis. Since then it has been found to exist from Umtali, in the east, through Rusapi, Marandellas, the Beatrice District, Enkeldoorn, Umvuma, Gwelo, Shangani, Bulawayo and north to the Lomagundi District. In fact it is probable that it exists in cattle belonging to Europeans and natives alike throughout the country. It is equally prevalent in Northern Rhodesia, and as far as one can gather, throughout the Union of South Africa.

This disease is not confined to Africa. In Great Britain it is second only in importance to and probably more prevalent than tuberculosis. In America it is stated by the Bureau of Animal Industry to be the cause of the loss of many millions of dollars yearly through its presence in dairy and range cattle. In New Zealand the losses in dairy products directly and indirectly attributable to it are estimated at £300,000 per annum.

In many ways this disease affects the human population of this country. The last census revealed a somewhat lamentable state of affairs and a population of a little more than 33,000 white people. A great proportion of these are dependent upon the cattle industry, and I doubt very much whether after his sad experience in the past the Rhodesian settler, however stalwart he may be, can "stand up" to another disaster. And if it is found that this disease of cattle is infective to human beings, the situation is fraught with grave dangers, and we, the guardians of the public health, are faced with a grave responsibility if we wish to see Rhodesia, our adopted country of which we are so proud, survive the storm.

It has long been known that abortions, even in such numbers as to suggest some common cause, were apt to occur among domestic animals, and various reasons were advanced to account for them, as, for example, feeding upon ergotised pasture, sewage

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poisoning, mechanical injury over exertion, fright or sympathy; but as long ago as the beginning of the last century certain keen observers maintained that "an infection was the causative agent." The correctness of this view was proved later in the century, when abortion was artificially produced by the introduction of vaginal discharge and fœtal membranes into the vaginas of healthy cows. It was not, however, until 1896 that Bang and Stribolt demonstrated the specific cause to be a bacterium known as the *Bacillus abortus* of Bang, and, having cultivated this organism, in bringing about abortion by the injection of pure cultures into the vagina of pregnant cows and ewes. Also injections of cultures into the circulation produced similar results. Later McFadyean and Stockman demonstrated what is of still greater practical importance, that pregnant animals could be infected by feeding upon infective material, either artificial cultures or natural exudates from infected animals. In these cases artificially produced the characteristic lesions of the disease were met with, and the bacillus could be recovered from the exudate of the fœtal membranes, the diseased cotyledons, and the intestinal contents of the aborted fœtus.

It is probable that the organism had been noted by previous observers, but it remained to Bang to isolate the bacillus, which required for primary cultures, not only a specific medium consisting of nutrient agar, to which liquid gelatin and sterile liquid blood serum had been added, but also an optimum growth temperature of 37°C. and a special oxygen content, indicated by the fact that the colonies develop in a definite stratum a few millimetres below the surface. The *Bacillus abortus* is thus not a strict anærobe, but has been classified as a micro-aerophile.

Various devices have been made use of in order to establish a primary culture and to afford the special oxygen requirements. But it would appear that in sub-cultures the organism can accommodate itself to ordinary aerobic conditions. Under such conditions, surface colonies develop in about three days as small, usually discrete honey-like dots. These later tend to coalesce and to form a creamy film which in time becomes darker in colour, and in very old cultures is actually coffee-coloured or brown.

The medium upon which the strain used in our Laboratory, and to which the organism appears to have become well accommodated, is prepared as follows:—

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|---|---|
| Lemco ... ... ... | 5 gm. |
| Sodium chloride ... | 5 gm. |
| Peptone ... ... | 10 gm. |
| Agar ... ... ... | 27½ gm. |
| Water ... ... ... | 1 litre. |
| Glycerine ... ... | 3 per cent. added to the filtered medium which has previously been rendered alkaline. |

Surface growths upon this medium are well established in three days, and fully developed growths suitable for vaccines are available within a week. A certain degree of moisture favours the growth, and for vaccines it has been found necessary to conserve in a special manner the water of condensation. Too much moisture, however, alters the cultural characteristics of the growth and the properties of the organism.

The *Bacillus abortus*, both in natural and artificial conditions, tends to collect in clusters, and these are to be met with in the affected chorion, cotyledons, characterised exudate and discharges, and in the stomach of the fœtus. They are stained readily by basic aniline dyes, but in the clusters the morphology is difficult to define. The term cocco-bacillus has been used to describe the organism, from the fact that coccoid and elongated coccoid or bacillary types are met with.

Some difficulty is experienced in establishing primary cultures, chiefly on account of the peculiar oxygen requirements of the organism. Several ingenious methods have been devised to cope with this, for example, suspected material is sown on a medium which is placed in a closed jar with other tubes containing common aerobic organisms which exhaust the oxygen until the stage when the *Bacillus abortus* finds the atmosphere congenial. This method is made use of to separate the *Bacillus abortus* from other organisms with which it may be associated in septic discharges; but perhaps the best method of obtaining a pure culture is to inoculate suspected material into guinea-pigs, when the *Bacillus abortus* becomes established in the spleen, which becomes enlarged, and sometimes, after two or three months, beset with tubercles. In a few weeks, however, the organism is present in the spleen in pure culture, and in such numbers that when small pieces of spleen substance are spread upon agar slants, a characteristic growth can be obtained. This method has proved useful in demonstrating the presence of the specific micro-organism in the udders and milk of apparently healthy cows acting as "carriers" of infection.

In 1918 Evans pointed out a close relationship between the organism responsible for infectious abortion of domesticated animals and the so-called *Micrococcus melitensis*, the cause of the well-known undulant or Malta fever in man. More recently Meyer and Shaw have stated (*Jl. Infect. Dis.* 1920. Sept. Vol. 27, No. 3, pp. 173-184) that "on morphological grounds the organisms of undulant fever and infectious abortion of domesticated animals must therefore be considered as identical," and suggest that a genus, for which they propose the name "Brucella," be created in the family Bacteriaceæ to separate and distinguish properly these important micro-organisms.

The serum of animals affected with infectious abortion will agglutinate the *B. abortus*, and in 1914 Bevan was able to demonstrate that the serum of cattle suffering from the disease in Southern Rhodesia would agglutinate strains of *B. abortus* obtained from Great Britain, the Union of South Africa and British East Africa. Similarly, serum

from natural cases of infection in British cattle would cause agglutination in emulsions of these strains. This observation suggests that the causal organism of bovine abortion in Southern Rhodesia is similar or identical to the *Bacillus abortus* causing the disease in other parts of the world, a matter of some importance, as will be seen later. It is probable, however, that there are different strains of the organism of varying virulence, just as there are strains of the *M. melitensis*; and it is conceivable that there may be a certain over-lapping of strains of the two organisms.

In February last a patient from the Shamva District was admitted to the Salisbury Hospital, and his serum was obtained by Dr. Peall and tested by Bevan, against cultures of *Bacillus abortus*, with which it caused rapid and marked agglutination in dilutions of 1 in 200. This I believe was the first demonstration of a co-relation between the abortion of cattle and undulant fever of man in this country. The test was prompted by an article by Feusier and Meyer, in which they showed by serological tests a close association between *Bacillus abortus* and *M. melitensis*, and pointed out that certain strains of *M. melitensis* bore a closer relationship to the abortion bacillus than to other strains of *melitensis*. They also demonstrated that "the serums from cows and hogs suffering from natural abortion disease may also react to both *B. abortus* and *M. melitensis* organisms."

Recent observations by Orpen, working in the laboratory of the Medical Department, and by Bevan, working independently, reveal a very serious state of affairs in this country, if serological tests and cross agglutination reactions are to be regarded as indicating any corresponding pathogenicity of the organisms.

The possibility of such an association has engaged the attention of numerous observers for many years past in other parts of the world, and in July, 1916, Cooledge, in the *Journal of Medical Research*, reviewed the experiments made up to that time by several observers. Mohler and Traum obtained cultures from guinea-pigs, inoculated from the tonsils and adenoids of 56 human beings, and obtained from one case distinct lesions of infection in the liver, spleen and testicles, from which the *Bacillus abortus* was recovered.

Larsen and Sedgwick made an extensive study of human infection by this organism. They examined the blood of 425 children, and obtained 73 positive reactions by the complement-fixation method. They also found that an infant taken from the breast on the seventh day after birth and fed on cow's milk gave a positive reaction on the twenty-first day. Cooledge himself examined the blood sera of 14 persons drinking raw milk, pasteurised milk, or no milk, and found that of the persons who had been taking raw milk or cream previous to the test three (or 50 per cent.) gave a reaction to the complement-fixation and agglutination tests. One woman whose blood reacted to the test had been drinking milk which was found to contain *Bacillus abortus* anti-bodies, and had been drawn from one quarter of a certain cow. One man whose serum gave a partial agglutination at 1 in 100 had been drinking about a pint of raw cream daily during the summer. These results satisfied the author that the presence of anti-bodies in human sera is due to the ingestion of infected milk, and may indicate either active infection or merely a passive immunity, due to the absorption of anti-bodies from the milk, and he adds, "we have no proof that *Bacterium abortus* (Bang) is pathogenic for human beings." No reference is made in these reports to any symptoms in these reactors suggesting undulant fever; nor are we told whether abortion at any time took place among human females fed upon infected milk.

It should be remembered that in natural conditions abortion due to this organism is essentially a disease of cattle, and it is stated by the Departmental Committee appointed in 1905 by the Board of Agriculture and Fisheries to enquire into epizootic abortion, that it had no hesitation in stating that it believed at least 99 per cent. of the outbreaks of cattle abortion which assumed epizootic characters to be due to infection by the bacillus of cattle abortion.

Mares, sheep and swine may also become infected with the bacillus of Bang, under natural conditions and by artificial methods. Goats, guinea-pigs and rabbits have also proved susceptible, and it may well be that the human female is not exempt.

Natural infection occurs by the vagina or by the mouth. It is probable that ingestion is the most common method. The bull is occasionally a mechanical transmitter of contagion, and it has been shown that the organism may become localised in the vesiculæ seminales, deferentia, testes and epididymides of the male, which may thus become a carrier of infection.

The symptoms in cattle may be briefly described. The disease is generally most severe in heifers and young cows, but may attack a susceptible animal of any age and at any stage of gestation. It is said that "the majority of cases of 'visible' abortion occur between the fifth and seventh month of gestation; the average period is probably between the fifth and sixth month, if a reliable estimate of the early or invisible abortions could be made. Some cows abort about the first or second month, and no suspicion is aroused until œstrum recurs a few days later" (Ainsworth Wilson). The suspicion that animals may frequently abort un-noted is confirmed by our observations in the country.

The course of the disease is insidious, and its existence is often unsuspected until the shortage of calves draws attention to its presence. In this country the diagnosis is confirmed by a special modification of the agglutination test.

The act of abortion is generally easy. Premonitory symptoms may or may not be present, and in many cases the fact that abortion has taken place is only detected by the discovery of the fœtus or by a peculiar yellow flocculent discharge which soils the tail and hind parts, or by the retention of the after-birth, which is a very frequent sequel. Particular attention

may be drawn to the fact that there is no appreciable effect upon the animal's general health and condition; that is to say, febrile disturbance, anæmia, rheumatic pains or indications of neuritis have not been observed. Pathological changes are almost entirely confined to the uterus and to its contents. The mucous membrane may be in a state of catarrh and a typical exudate may cover the chorion. This is somewhat characteristic, being of a lightish yellow colour, varying to dark brown. The membranes may be œdematous and the cotyledons may be swollen, and occasionally necrotic. The fœtus frequently appears quite normal; it is sometimes mummified, but is rarely putrid.

The disease may be regarded as a disease of the fœtal membranes. If the animal is not pregnant, the organism can produce no pathogenic effects, and it is known that in apparently healthy animals the udder may be heavily charged with abortion bacilli, without harm to the animal until it becomes pregnant, when the organism may again make its way to the uterus. Schroeder and Cotton record that "a number of calves produced by cows with infected udders were killed immediately after they were born, and their bodies tested for the presence of abortion bacilli, through guinea-pig inoculation methods. It was found that such calves—those that were delivered alive and seemingly healthy and vigorous—may harbour abortion bacilli in their stomachs and gastrohepatic lymph glands, but invariably, when the calves were infected, the afterbirth and uteri of the dams were also infected." Animals that thus harbour the organism in their udders are a constant source of danger, certainly to cattle, possibly to man. They act as "carriers," and may be the means of infection of a perfectly clean herd, or of re-infection in a herd which in the course of time has become clean. So long as such animals are in lactation the bacilli may be excreted in the milk. If the human subject is liable to a disease caused by this organism, this source of infection is of considerable importance.

Let us now compare the symptoms of Malta fever in goats. The following description by Dubois is quoted by Edwards in a most comprehensive paper read by him before the National Veterinary Medical Association, to which I am largely indebted for many of the details I have brought before you. Dubois writes: ". . . In the goat there are as a rule no visible symptoms, and the animals maintain to all appearance their good health, the onset of the disease always passing unnoticed. . . . The most important symptom, and the one that would always make one suspect Malta fever, is abortion, but even that is not constant, nor is it diagnostic. When the disease makes its appearance in a herd for the first time, the percentage of abortions may be anything from 50 to 90 per cent. of the pregnant goats. If these goats are again served, abortion occurs again, but the percentage is not so great as on the first occasion. Abortion may cease completely in a herd, but this does not make the danger any less, as a certain number of animals always harbour the parasite. Sterility is rarely observed." "In the sheep the symptoms shown closely resemble those in the goat, and, as in the goat, abortion is the most important symptom." "In all animals, independently of the clinical symptoms, the blood serum, urine, and milk possess agglutinating powers for *Micrococcus melitensis*. The value of the (agglutination) test (in diagnosis) is indisputable, but since the serum may retain its agglutinating power for years after all trace of infection has disappeared, a positive result only indicates that the animal is or has at one time been affected."

Thus we see that *M. melitensis* causes in certain of the lower animals a disease similar to that caused by *B. abortus* in cattle. But it also gives rise to a disease in man characterised by entirely different symptoms. In Rhodesia a number of cases have recently occurred among human beings who have shown the clinical manifestations of Malta fever, but as far as can be ascertained, have not imbibed goats' milk, but have resided on farms where infectious abortion of cattle is known to exist. Circumstantial evidence, therefore, points to infection through infected cattle, but direct proof is not yet available. The object of this meeting is to compare notes in order that the members of the two professions may combine in investigating and, if necessary, eliminating this danger.

The most powerful argument against the infection of man by the *B. abortus* of cattle is advanced by Edwards, in the paper referred to. He says: ". . . There can be but little doubt that the two organisms (*i.e.*, *M. melitensis* and *B. abortus*) differ in the all-important property of pathogenicity, for otherwise, in view of what we know concerning the excretion of the abortion bacillus in the milk, and the large percentage of cows that act as carriers of the bacillus, a large part of the population of Northern Europe and the United States would be liable to infection, but evidence to hand has failed to prove that the drinking of milk from aborted cows is a source of danger to human beings." On the other hand, it has been stated that Malta fever does not originate north of latitude 46°, but cases have been observed in England by Manson himself. It has been pointed out that Switzerland and South Germany are the home of the milch goat. Nevertheless these countries are particularly free from Malta fever.

If *Bacillus abortus* even occasionally caused in man in other parts of the world where infection of cattle is common the remarkable symptoms manifested by patients from the Marandellas District and elsewhere in this country, the fact must surely have been noted; or if the symptoms of Malta fever were common in countries where the drinking of goats' milk could be excluded as a possible source of infection, but where infectious abortion was known to prevail, the circumstance would scarcely have been overlooked. It is certainly remarkable that although specific abortion of cattle has been prevalent in the Marandellas District since 1914, it is only within the

last few months that the so-called Malta fever cases in man have been detected.

The suspicion that abortion among human females might have been associated with the drinking of infected milk, however, has frequently been suspected and suggested.

It is also a fact worthy of consideration that on farms where men have been infected the other members of the family have apparently escaped, although if infected milk is the cause of the disease, one would have expected the women and children to have been the chief victims.

In this connection it should be mentioned that the Malta fever organism is not a delicate organism and is very resistant to desiccation. It is, therefore, probably blown about in dust. Moreover it is excreted in the urine of apparently healthy goats and cows. Possibly the *B. abortus* is disseminated in a similar manner, and if so, suspicion might fall upon the dust of cattle kraals where infected animals have been herded, which would explain the large proportion of cases among males, as compared with women and children.

Another statement made by Edwards may be quoted. He says :—

> " Experimentally it has been found quite easy to infect and cause abortion among other farm animals and in small laboratory animals, by causing them to be inoculated with or to ingest doses of Bang's bacillus, and it is quite possible that even man may become infected ; but the natural reservoir of the disease-producing organism is the cow, and there is every reason to believe that just as the bovine type of tubercle bacillus would cease to exist if bovine tuberculosis were completely eradicated, so would Bang's bacillus no longer persist if the bovine species became extinct. In devising control measures, therefore, other animals than cows need not engage our attention."

A grave responsibility is thus imposed upon my profession, and I may be forgiven if I give a brief outline of the measures which have been adopted by the Veterinary Department of this country in its endeavour to cope with a disease which up to the present has defied the efforts of Administrations in other parts of the world.

At a meeting of the professional officers of the Veterinary Department, held in the Veterinary Laboratory, Salisbury, in August, 1920, to discuss this disease, it was decided that :—

> " Official quarantine of infected farms and herds was impracticable and tended to defeat its own ends by leading to the suppression of information as to the existence of the disease. Similarly, the publication of notices on the doors of magistrates' courts and in the Government *Gazette* was not desirable. It was admitted that the only method at present available to the Veterinary Department of limiting the distribution and dissemination of the disease was in the power of veterinary officers to refuse permits for the removal of infected or suspected cattle.
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> " It was decided that the best method of controlling the disease from the point of view of veterinary administration at the present time was to educate and assist the public, and it was suggested that veterinary officers should, when possible, deliver lectures on the subject in their respective districts.
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> " It was agreed that the best method of detecting or determining the specific nature of any outbreak of abortion was by Bevan's modification of the pipette method of collecting blood for the agglutination test.
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> " The advisability of advising purchasers of cattle to buy ' subject to the test ' was discussed, but it was not considered feasible. It was decided, however, that veterinary officers should warn and give advice to buyers contemplating purchase of animals likely to be infected.
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> " It was agreed that the reports received from veterinary officers and stock-owners as to the efficacy of the vaccine, as prepared at the Veterinary Laboratory by the bacteriologist were most satisfactory, and it was decided that the method should be recommended and applied when possible—that is, when supplies were available.
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> " The danger of the bull as a source of infection was discussed, and it was decided that all bulls in infected herds should be tested, and, if yielding a positive reaction to the agglutination test, should be destroyed, the test to be applied before vaccination. It was decided that non-reacting bulls should be removed from the herd for a period of six months and should be vaccinated with the de-vitalised vaccine.
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> " It was decided that all female stock in an infected herd should be vaccinated with de-vitalised vaccine, including calves, and in this way an immune herd should be established. New stock should not be introduced to the herd until a normal calf-crop indicated the immunity of the herd, and then only after inoculation.
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> " It was agreed that so-called ' queen ' cows were a source of danger, and should be tested, and if reacting, should be destroyed.
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> " It was decided that vaccine should be issued through the district veterinary surgeons, in order that they might be aware of the existence of the disease in their districts, the first vaccination to be under the control of the veterinary officer in charge, but if necessary, subsequent injections to be performed by the owner.
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> " It was thought necessary to point out to owners that the vaccination could not restore life to a dead fœtus, but might hasten the immunity of an animal which had aborted and prevent non-pregnant animals becoming infected.
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> " It was pointed out that a considerable number of barren cows failed to react, and that these could only be destroyed at the owner's discretion.

The cause of their condition was probably other than infection by the *Bacillus abortus*.

"It was decided that in all outbreaks an attempt should be made to trace the source and origin of the infection. It was considered desirable to apply the test when a number of cases of retention of after-birth was reported in a herd."

The special method of collecting blood for the agglutination test referred to is merely a modification of the Wright capsule, used with a certain preservative mixture which is added to the blood to prevent decomposition. Hitherto in this country, and at the present time elsewhere, the technique of collection was crude and unsatisfactory. The animal was secured and generally thrown; a cord was passed round the base of the neck in order to "raise" the jugular vein, from which blood was drawn off into a sterile bottle. The operation had to be conducted under aseptic conditions, any extraneous organism making its way into the blood setting up changes which interfered with the accuracy of the test. The difficulties of successfully maintaining such conditions in veterinary practice may be readily understood by those having any field experience. The result was that at least 95 per cent. of specimens sent for test arrived in a putrid or hæmolysed state, and quite unsuitable for diagnosis. The pipette originally devised was merely a piece of glass tubing with a 4 mm. bore, and drawn out to a point at each end. The animal having been secured and its ear damped and dried, a bold cut was made across the posterior auricular vein, so that the blood escaped freely. A small quantity of preservative having first been run into the pipette to about a quarter of its length, the point was applied to the blood accumulating at the wound, so that it was drawn into it by capillarity. The pipette was then sealed by sealing-wax or other adhesive material. By this method at least 95 per centum of specimens submitted have arrived suitable for testing at the Laboratory, and it may be claimed that this simple invention has been the means of detecting the disease in many localities where otherwise it might have been overlooked.

After many experiments a still more simple method has been devised by means of which the veterinary officer, or, indeed, the farmer himself, will be able to test suspected animals without sending the material to the laboratory. The method may prove useful to medical practitioners, enabling them to carry out their own tests with *M. melitensis* or, indeed, any micro-organism which will react to agglutinins.

Reference is also made to the de-vitalised vaccine prepared at this laboratory. The term "de-vitalised" has been coined to distinguish the vaccine from that which is generally referred to as a "dead" vaccine, in which the micro-organisms have been killed by heat.

Since 1914 Stockman has applied a vaccine to virgin and barren cows consisting of enormous doses of living bacilli. This apparently strange procedure is based upon a well-known belief in other countries that the majority of cows infected with intectious abortion do not abort at two successive pregnancies, or that if a cow aborts a second time, it rarely aborts a third.

It is also a well-known peculiarity in connection with infectious abortion in other countries that, provided infected animals are not introduced from without, the disease tends to wear itself out and in a few years to disappear from the herd. Also it is known that if a long interval, say four to six months, elapses between abortion and the next impregnation, the cow will carry her calf to full term. These observations suggested that in nature an immunity is sooner or later set up in a non-pregnant female at one time infected, and it was sought by means of the introduction of vaccines containing the living organism to imitate or hasten the natural process. The method, however, is fraught with danger, especially in this country, where it is often difficult to determine whether the cattle are in calf or not, and where primitive methods of transport render it unsafe to issue infective material.

A second method was tested, namely, the inoculation of cattle with vaccines made up of organisms destroyed by heat. Stockman having drawn the deduction that the results did not justify the trouble involved, condemned the method, an example which has been followed by others, in spite of the fact that the conditions under which his tests were made were not free from objections. For example, the dead vaccine was inoculated into cows already pregnant, these cows being chosen from a badly infected herd, so that the fœtus of some of them may have been seriously damaged before the vaccine was applied. German experimenters, Zwick, Zeller, Krage and Grunder, have also found that living vaccine yields the best results, but even with dead vaccines figures show a well-marked reduction in cases. There is, however, in my profession, as in others, a tendency to accept without criticism the voice of the oracles. One grave disadvantage attaches to the living vaccine, namely, that even when applied to non-pregnant animals, the organism may become localised in the udder, from whence, when the animal becomes pregnant, it may infect the fœtal membranes. These being discharged when the calf is born, may set up infection in a clean herd, or re-infection in a herd from which the disease has died out.

Bevan has shown that the agglutination reaction produced by a heated "dead" vaccine, although not as strong as that produced by living vaccine, is nevertheless quite appreciable; and if agglutination may be taken as an index of the progress of immunity, the reaction set up should prove a valuable adjunct in dealing with this disease. But the heating of an organism to the temperature generally applied in producing a vaccine coagulates the albumen of the organism and destroys its toxins. It also, as may be seen in the test tubes exhibited, renders the organism insusceptible to agglutinating sera, facts which may be seriously considered by the medical profession, who have to rely so often upon dead vaccines.

To overcome these objections, Bevan devised a method of destroying the organisms employed in his vaccines by exposure to chloroform, which, although rendering the organism inert, does not destroy its toxins. A vaccine made in this way will still agglutinate, which cannot be said of many of the vaccines composed of organisms destroyed by heat.

Good results have followed the use of this vaccine when suitably applied, as shown by the reports received from district veterinary surgeons, but in some instances too much has been expected of it. In most cases where it has been pronounced a failure careful investigation has shown that instructions were not carried out, or that many of the animals at the time of treatment were already well advanced in pregnancy, and probably infected, so that the expulsion of the calf was inevitable. In some cases also the dose was too small to render the animal immune throughout the nine months of pregnancy, and in future the quantity of organisms to the dose will be greatly increased, and the timing of the injections will have to be altered, so that the immunity conveyed will be maintained throughout the full period of pregnancy. Apart from its intrinsic value, the vaccine is a useful adjunct to administrative measures. The knowledge that animals can be treated has prompted owners of infected herds to report, and has justified the Veterinary Department in refusing permits for the movement of such herds during the three months' period of treatment.

I think we may justly claim that the methods adopted by the Veterinary Department of this country in dealing with infectious abortion are far superior to any obtaining elsewhere. However imperfect they may be, an earnest endeavour has been made to cope with a disease which other administrations have admitted their inability to control, and have removed from the list of scheduled diseases a lamentable confession of inertia and impotence.

Having detained you so long that your patience must be well-nigh exhausted, I would venture to summarise the points which I have brought forward, in the hope that they may be freely criticised and discussed, for any good which may arise from this meeting will depend, not so much upon the paper as upon the debate which follows.

### Conclusions.

1. The disease known as infectious abortion of cattle, which exists in Southern Rhodesia, is caused by the *Bacillus abortus* of Bang, and serological tests indicate that it is identical with the specific abortion of cattle in other parts of the world.

2. The *Bacillus abortus* of Bang bears a close morphological and biological resemblance to the *Micrococcus melitensis*. Serological tests also indicate a close affinity, in that certain strains of *M. melitensis* can be agglutinated with serum from cattle infected with infectious abortion, and strains of *B. abortus* can be agglutinated by serum from human patients suffering from undulant fever.

3. The characteristic symptom of undulant fever in goats and sheep is abortion.

4. Certain cases presenting symptoms resembling undulant fever have occurred in Southern Rhodesia in men who, as far as is known, have not obtained infection from goats, but have resided on farms where animals are or have been infected with infectious abortion.

5. It is suggested that these cases are suffering from an infection caused by the *Bacillus abortus* of cattle.

6. It is also suggested that human females may contract infectious abortion through the ingestion of the organism in milk and dairy products from infected cows.

7. Although infectious abortion is prevalent in other parts of the world where goats' milk is not used for human consumption, it has not been accused of causing the symptoms of undulant fever in man, nor has it been proved to cause abortion in human subjects.

8. Although infectious abortion has prevailed in the Marandellas District for many years, it is only within the last few months that cases resembling undulant fever in man have been recorded.

9. While circumstantial evidence points to the infection of man by the *Bacillus abortus* of Bang, and scientific tests up to a point support this suspicion, the final proof is not yet available.

10. If infectious abortion of cattle is essentially a bovine disease, a grave responsibility attaches to the Veterinary Department; and if this disease is communicable to man, a hearty co-operation between the medical and veterinary professions is necessary in dealing with it.

### Discussion.

Dr. J. E. Hurworth said there was a point in Mr. Bevan's lecture upon which he should like information. In the Marandellas district Mr. Bevan told them contagious abortion had been in existence for many years, and it was only recently that the medical profession had realised that Malta fever existed. Was it not possible that cattle in that district were infected with Malta fever? Proceeding, Dr. Hurworth said that after the Boer War cases of Malta fever occurred in the Union. It was then explained that troops had been brought from Malta to South Africa, and that this was considered to be the means by which the disease had been introduced. This would suggest that man is a carrier of the disease to man. Unfortunately, he could not speak in a knowledgable way.

Dr. L. J. J. Orpen said Mr. Bevan had stated the whole case very clearly, and that there was little left for him to say. Referring to Mr. Bevan's remark that Malta fever in Southern Rhodesia had only been detected in 1921, he (Dr. Orpen) did not think there was any proof that this was really the case. More than once he had pointed out in his annual report that Malta fever did probably exist more frequently than people suspected, and it might have been treated as malaria. It may possibly have existed in the Marandellas district as long as contagious abortion had. The similarity between the two diseases was very marked. As regarded the localisation of the organism in the body, Mr. Bevan had told them it had not been very thoroughly worked out, but several things were common to man and the cow. They got it, for instance, occurring in the testes and in the vagina. In the rest of the body they could make no comparisons, as they did not have the facts. As regarded the serological tests, the evidence

was far more satisfactory. They could see practically no difference between the two organisms, which he believed had been divided into four groups. As far as cultures were concerned, he could see no difference between the bacillus of abortion and the bacillus of Malta fever. He was very interested in what Mr. Bevan said about the immunity after abortion of cows. He believed a large number of authorities held that Malta fever rendered a man more susceptible to following attacks. However, after reviewing all the facts, he had no doubt there was an extraordinary close resemblance between the two organisms, and he believed they were identical. One curious thing remained to be explained, and that was although there was a very wide infection of contagious abortion in the Marandellas district and other parts of Southern Rhodesia, there was not a large number of cases of Malta fever. Two explanations occurred to him. One was that it might be dependent upon the amount of infection and the locality. The other explanation, he thought, was that in one animal the organism caused certain symptoms and in another it caused different symptoms. He considered there was a certain amount of evidence to support the latter theory.

Mr. GUY H. PEALL thought there was one outstanding feature of Mr. Bevan's paper, and that was the necessity for a closer relationship between the two branches of their profession. Personally he would like to see the medical laboratory next to the veterinary laboratory, with interchange of views. Proceeding, Mr. Peall said that the first case of Malta fever reported in this country was by Dr. Appleyard in 1896, from, he thought, Umtali. Infection in this case was distinctly traced to a herd of goats brought from Umtali. In all the cases of Malta fever he (Mr. Peall) had had there had always been enlargement of the spleen and liver. It was rather a curious fact that he had never had a case of a woman suffering from Malta fever. He would like to know if anyone present knew of a case.

Dr. MACNAUGHTON: I think I have one now, but I am not sure.

Dr. ORPEN said there was a case at the hospital where the Malta fever organism gave a very strong positive reaction with typhoid. On those grounds he concluded it was enteric. On investigation it turned out she had nursed a case of Malta fever. He was of the opinion it was enteric, but it may have been Malta fever.

Mr. PEALL, proceeding, said he had had several cases which reacted to stock vaccine, but one did not.

Mr. J. M. SINCLAIR said that Mr. Bevan had used the term "varying in virulence," and Dr. Orpen referred to "strains." That prompted him to make a few remarks on infectious abortion in cattle. What was a most extraordinary thing about infectious abortion in cattle was that eight years ago, although they knew it existed in this country, it started from six various centres and spread throughout the country in an epizootic form. Mr. Bevan said his diagnosis was made in 1914. He (Mr. Sinclair) had no doubt, although he could not produce facts to prove it, that the disease always existed among native cattle in this country and that that recent extension in a more virulent form was due to the fact that they were importing and breeding a class of animal more susceptible to disease, and by passage from one animal to another the disease increased in virulence. That might possibly account for the increased incidence of disease in human beings in that country. His opinion was that the disease in cattle was becoming intensive in virulence simply by the importation of a type of animal which was more susceptible, and that by rapid passage from one to another they had really a more virulent strain than they had ten years ago.

Miss TRUTER said that Mr. Bevan had stated the strain of contagious abortion in the Union was practically the same as it was there. She had heard from a friend in Pretoria that there were very few cases of Malta fever in the Union. No cases had arisen which had led him to connect Malta fever in the Union with contagious abortion in the cattle there.

Dr. ORPEN: Mr. Sinclair's explanation may account for that.

Captain SMITH (Northern Rhodesia) said Lewanika had told him in 1913 he had lost a considerable number of cattle from contagious abortion. He wished to put on record his appreciation of Mr. Bevan's work. His method of application of the agglutination test would be invaluable, not only in this country but elsewhere.

Dr. MACNAUGHTON thanked Mr. Bevan for his very instructive paper. He thought the very close connection which existed between the two professions was shown by meetings like the present one. Proceeding, he quoted a case of abortion in a woman who lived on a farm where contagious abortion existed amongst cattle. She admitted drinking quantities of raw milk. However, her blood report was negative; but in spite of that he thought that clinically it was far too much like it to be anything else. About a week ago he had occasion again to see a woman who was having her fifth abortion. It was not produced from any recognisable cause or other disease. In this case also he found cases of contagious abortion had occurred amongst cattle on the farm. He would have her blood tested. Another case that came to his notice was of a man from Beira who had what appeared to be Malta fever, so he sent him to Cape Town. The disease was there proved to be Malta fever. He was treated with galyl with apparently good results. The man returned, but had not been back long when he had another dose of Malta fever. He (Dr. MacNaughton) gave him galyl, but the effect was only temporary. The patient had since gone to Cape Town for further treatment.

Mr. G. H. PEALL said he had given galyl to two of his cases with no results.

Dr. ORPEN said Bevan's vaccine had been tried with good results. The point was what were they to do. Dr. Peall had suggested co-operation. He (Dr. Orpen) was in favour of that but would prefer amalgamation. The Veterinary Department were faced with a serious epidemic, and were dealing with it very satisfactorily, but with the human element it was a more difficult matter to deal with, as they did not know who were exposed to infection. He asked Mr. Bevan whether he could suggest anything in the way of prevention.

Colonel C. M. GOODBODY (Marandellas) said he had been in Malta, Egypt and India, and had been very struck with the difference in the clinical symptoms of Malta fever in those countries and in this country. He had through his hands five cases of Malta fever in the last three months, and had been very much struck with the absence of the pains of sciatica until the later stages. He knew of three cases in which there was no pain at all; nothing but a temperature. Proceeding, he cited the case of a woman who had three miscarriages, and who, it was found, had used milk from cows bought from an infected herd.

In reply to Mr. Huggins, Colonel Goodbody said that cattle were not bred in Malta.

Dr. HURWORTH asked if anyone could say whether contagious abortion existed in South Africa prior to 1900. Was it not possible that they were getting infection man to man and not from animals?

Mr. BEVAN replied to the discussion.

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## Royal College of Veterinary Surgeons.

RESULT OF EXAMINATIONS, DECEMBER, 1921.

LONDON:—

*Class A.*—C. B. Thompson, W. E. Howell,* R. Swaby, D. C. Fenwick, K. F. P. Quin, R. Coulthard, C. F. Knell, F. W. L. Gooch, P. E. Emson,* J. C. Jackson, W. R. Barry.

*Class C.*—E. R. Ambrose, A. W. Stableforth, C. Parker,* R. C. U. Fisher, E. J. Gill.

* Indicates 2nd class honours.

DUBLIN :—

*Class A.*—J. H. B. Best, N. Burke, A. C. E. Higgins, V. G. Hinds, W. F. F. Huey, W. F. Jarratt, J. J. Kane, M. F. Kilcoyne (2nd class honours), M. C. W. McMahon, J. P. McNally, J. T. Morton, J. Mullins, T. F. O'Hara, M. J. O'Meara, D. O'Reilly, C. U. K. Porter, H. K. Purdy (2nd class honours), T. J. Tyrrell.

*Class B.*—J. R. Carey, R. W. Cassells, R. A. S. Coulter, P. Crowley (2nd class honours), H. L. Gravelle (2nd class honours), J. G. Grogan (2nd class honours), J. Hannigan, T. F. C. Hogan, B. Howell, H. A. Hunt, J. A. Kelly, F. T. McKenna, J. J. O'Beirne, P. O'Malley, H. T. O'Neill, N. F. Pollock, G. E. Rogan, R. T. Sheppard.

*Class C.*—D. D. Corcoran, J. J. Geoghegan (2nd class honours), W. J. McFeely, G. McKee, G. T. O'Reilly.

*Class D.*—D. B. Colbert (2nd class honours), New Park House, Athea, Co. Limerick; T. J. Egan, Parkview House, Kilconly, Tuam, Co. Galway; H. C. Evans, 8 Montrose Terrace, Ranelagh, Co. Dublin; R. Gregg (2nd class honours), Kilraughts, Ballymoney, Co. Antrim; M. A. Heffernan, St. John's, Athy, Co. Kildare; W. R. Henry, 33 Mill Street, Ballymena, Co. Antrim; E. J. Hughes, Commercial Hotel, Middletown, Co. Armagh; P. McDonnell, Ardane, Kilkishen, Co. Clare; J. M. Morris, 53 Cabra Road, Dublin; J. Thompson, 56 Chichester Street, Belfast.

The above-named successful members of Class D were registered M.R.C.V.S.

## The University of Liverpool.

DEGREE OF B.V.Sc.

Second Examination (Part II.).

Davies, G. O.; Downham, K. D.; Holtum, A. W.; Knight, Edith G.; Taylor, E. L. (with distinction).

EDWARD CAREY, *Registrar.*

## Election of Council R.C.V.S., June, 1922.

The foreign voting papers for the next election of Council will be issued early in January. The following members of Council retire by rotation :—

Major J. Abson, Sheffield.
H. Sumner, Esq., Liverpool.
Major-General L. J. Blenkinsop, London.
G. A. Banham, Esq., Cambridge.
Lt.-Col. J. W. Brittlebank, Manchester.
J. C. Coleman, Esq., Swindon.
P. J. Howard, Esq., Co. Clare.

The death of Col. A. W. Mason will not create an additional vacancy, as his term of office would have expired in June next.

Nominations for election should be sent to the Secretary at 10 Red Lion Square, W.C., as soon as possible, in order that the names may be included in the foreign voting papers.

**The progress of economic beef production is, says the *Daily Mail*, seen in a list of the Norwich champions and their ages. The champions of the late '70's were anything from 4 to 4½ years old, but the last four shows have included two animals both well finished for the butcher at under 2 years, and there has been no 3-year-old champion for 20 years.**


# The Veterinary Record.

*24th December, 1921.*


## *VETERINARY LEGISLATION.*

In our issue of December 10th we suggested that an impartial inquiry would be the best means of arriving at a just settlement of the alleged grievances of the Universities of Liverpool and London with regard to the powers of the Royal College of Veterinary Surgeons. To our mind, if there is one institution in this country which has nothing to fear before a searching inquiry, that institution is the body corporate to which we belong. Established in 1844, it has carried out with unvarying loyalty and devotion to the best interests of the State the duty of maintaining an efficient veterinary service, not only for the mother country, but also for the colonies. It has done this in spite of the shameful neglect of the State to provide it with means to carry out its duties, and in face of the notoriously unfair privileges the British Parliament has always accorded to quacks. The need for such an institution as the R.C.V.S. was felt in the early years of the last century, but its establishment was necessary as much in the interests of the general public as of the profession itself. It was left, however, to a handful of enthusiastic veterinary surgeons to take steps necessary for the obtaining of the Charter, and the cost, somewhere about £750, a large sum in those days, had to be provided as a loan from the pockets of those same gentlemen. In addition, all the costs of administration had to be met out of voluntary subscriptions. When the Charter was granted, it contained no provision for giving the College an adequate income, and from its inception the young institution was starved and had to depend on the generosity of its members to keep it alive. An annual subscription was paid voluntarily for some years until the loan was paid off, but this meant that the chief anxiety of the Council had perforce to be not what ought to be done, but what with their limited means was possible.

The College was also at once faced with a struggle of another kind, namely, the opposition of other institutions who desired to have the Charter amended; and much time and energy and patience were required to secure an opportunity of working in peace and undisturbed.

Not only so, but the Charter was soon found to be powerless to preserve to qualified men alone the title of veterinary surgeon. Unqualified persons constantly used the title, and an ignorant public had no

means of distinguishing between the quack and the qualified man. For over twenty years the Council attempted to obtain redress, and only succeeded after much expense, in 1881, in obtaining an Act to protect the title, and that at the cost of registering over 800 so-called "existing practitioners." Parliament would not grant to the qualified members of the profession the sole right to practise. They would not grant such a right even to the medical profession. Nor was it possible to obtain any Government assistance for the very important national work the R.C.V.S. was carrying out. Members of this generation would do well to remember what their forbears have done for the protection of the profession, and how freely they subscribed funds in order to obtain what improvement in the status of the profession it was possible to secure. They would do well to realise also that the responsibility for the delay in obtaining recognition has never been due to the apathy or incompetence of the governing body. It has been and is still the fault of Parliament itself. In this respect indeed the veterinary profession is no worse off than the medical. Do veterinary surgeons know that it took the medical profession a quarter of a century of agitation before they obtained the Medical Act of 1858, and that from that time onwards the profession had to fight and agitate year after year until the Amending Act of 1886 was passed? Between the years 1870 and 1881 no fewer than 18 Medical Amendment Bills were introduced into Parliament, and not one of them passed! A Royal Commission on the Medical Acts was then appointed to inquire into the whole question of medical education and registration, and when four years later the Amending Act was passed, it was still recognised to be incomplete and unsatisfactory. The medical profession are still not satisfied with the present state of the law, and for the past thirty or more years the agitation for a further amendment of the Act has been going on. In December, 1903, we published in these columns the outline of a Medical Amending Bill as approved by the medical profession. Among other things, this Bill was to provide for a one-portal system of admission to the profession, and for an annual registration fee. This Bill was discussed by all the divisions of the British Medical Association over a long period of years and received the most thorough consideration. It reached a final approved form in 1909, and since that time constant attempts have been made to introduce it into Parliament, without success.

These facts should give pause to those who are so ready glibly to blame the Council, which they elect to carry on the business of the profession. The recently obtained Veterinary Surgeons Amendment Act of 1920 required thirteen years' hard and constant labours to get it through Parliament. The responsibilities of members of Council are great. It is necessary that they should receive the whole-hearted support of the profession. Service on the Council costs the members much time, much anxious thought, and in the case of many of them a very considerable expense. Let the profession see to it that their hands are strengthened in the present struggle by the knowledge that they have a unanimous profession behind them.

### Southern Rhodesia Veterinary Association.

A meeting of the Southern Rhodesia Veterinary Association was held in the Council Chamber, on Saturday, November 12th, when a paper was read by Mr. L. E. W. Bevan, M.R.C.V.S., Government Veterinary Bacteriologist, on "Infectious Abortion of Cattle and its possible Relation to Human Health." There were present:—Mr. J. M. Sinclair (in the chair), Messrs. Hamilton, Hooper-Sharpe, Huston, Johnston, King, and Smith (Northern Rhodesia). The following members of the medical profession also attended and participated in the debate:—Messrs. Ellis, Gatchell, Huggins, Hurworth, O'Keefe, MacNaughton, Orpen, Peall and Colonel Goodbody. Miss Truter, Messrs. Crisp, Byron-Moore and Meade were also present.

[Mr. Bevan's paper, together with the ensuing discussion, appears elsewhere in our columns.—ED.]

## Abstracts and Reviews.

### Antitetanus Immunisation.

In certain parts of this country tetanus is so prevalent among horses that it is the custom for veterinary practitioners to inject a dose of antitetanic serum before performing any cutting operation upon a horse, and, in the case of an accidental wound which has come in contact with the ground, to inject serum as a matter of routine. In such districts it would be an immense gain to the owner and breeder if he could confer upon foals and young stock an early and lasting immunity against tetanus. The paper read on November 15th before the Pathological Section of the Royal Society of Medicine by Mr. J. B. Buxton, F.R.C.V.S., and Mr. A. T. Glenny, B.Sc., assumes, therefore, an aspect of practical importance. Five hundred horses tested by them gave no evidence of possessing any antitoxic immunity. An injection of tetanus toxin containing 20 test doses overneutralised with antitoxin was administered thrice at intervals of three days. A month later the horse so immunised was found to tolerate a quantity of toxin exceeding 2,000 guineapig-lethal doses and probably equal to several hundred minimum horse-lethal doses. Had these facts been available previous

to the war, no doubt they would have been applied to the saving of the lives of many valuable horses. The duration of the immunity conferred remains to be accurately determined, but should the method prove, on further trial, to be a safe preventive against tetanus, it might be expedient so to immunise every horse in the kingdom. The collateral question will then arise whether the same method can be applied to prevent accidental tetanus in the human subject.—*Lancet*, December 3rd, 1921.

### Reciprocal Contagion of Horse and Human Diphtheria.

Experiments were made in 1920 by Captain F. C. Minett, R.A.V.C., with diphtheria bacilli isolated from eleven horses and a mule. Six of the cultures were sent to the author for examination. Captain Minett is of the same opinion as Cobbett, *i.e.*, that horse diphtheria is of practical importance in relation to the public health and that the occurrence of the disease in horses throws light on the comparative frequency of "normal" antitoxin in their blood.

The discovery of the diphtheria bacillus in superficial septic lesions in the horse apart from specific infection of the nasal mucosa is paralleled by recent observations on the human subject. Thus, there is growing evidence that in man the *B. diphtheriæ* is apt to be associated with a variety of chronic skin lesions or may become implanted upon cutaneous or subcutaneous lesions already affected with pyogenic bacteria, for example, war wounds and friction sores. Martin (1917) isolated virulent diphtheria bacilli from sores of this kind which were refractory to the usual methods of treatment. It is significant that they occurred in men of the Australian Light Horse. Similar observations were made afterwards by others in Egypt and Palestine.

Captain Minett's observations suggest that reciprocal contagion of horse and human diphtheria happens more frequently than has hitherto been suspected. Inquiries undertaken with this probability in mind when the circumstances of infection are obscure may lead to the detection and prevention of cases of diphtheric infection, and may indicate effective treatment with antitoxic serum.

[*The Toxigenic Features of Stains of the Diphtheria Bacillus isolated from Horses and from a Mule* (G. F. Petrie, M.D., *Journal of Hygiene*, vol. xx., No. 2, October, 1921), ex *Jnl. Trop. Med. and Hygiene.*]

## Clinical and Case Reports.

**The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases.**

### Stuttgart and Distemper Exhibits.*

By Captain Hamilton Kirk, M.R.C.V.S., Wigmore Street.

Case I.—*Subject.*—Fox terrier, 18 months old. *History.*—Had recently been off colour in various ways, and had been treated by several veterinary surgeons during the previous three or four weeks, without a definite diagnosis.

It was brought to him on October 1st.

*Symptoms.*—The temperature was 103°, there was a slight cough, but little or no conjunctival or nasal discharge. There were diarrhœa, great thirst, no appetite, dullness and shivering, and he diagnosed distemper. The dog died on October 3rd, in convulsions, and he had brought with him the intestines and the stomach. They showed the conditions often seen in swine fever and rinderpest, viz., hæmorrhagic corrugations. There were myocardial petechiæ, congestion of the pericardium, acute gastro-enteritis, affecting the stomach and the whole length of bowel; hæmorrhages from the mesenteric vessels, inflammation of fauces, larynx and post and ant. nares; but there were *no lung lesions*, and no macroscopic brain lesions. There was a slight enlargement of the spleen and liver, and also of the mesenteric glands, and much blood-stained peritoneal effusion. There were great ridges of the intestinal and gastric mucous membranes.

Case II.—*Subject.*—Dog, which had suffered from Stuttgart disease. Tongue (exhibited) showed ulcerations and gangrenous edges.

*Symptoms.*—On the first day the dog was off its food and salivating slightly, with persistent vomiting; the temperature was 101°. On the second day the temperature was 102°, and there was a peculiar, evil and sometimes fishy smell from the mouth. The dog was vomiting, constipated and very dull. On the third day it was very quiet, lying on its side. Its mouth was open and it was salivating. The temperature remained at 102°. The use of an enema and aperient failed to produce any effect. The pulse was thin, and there was extreme lethargy. On the fourth day it was shrieking with pain at intervals during the morning, but later died quietly. A *post-mortem* revealed acute cystitis; hyperæmia of the kidneys; tarry, uncoagulated blood, hæmorrhages all over the spleen; congested myocardium; inflammation of rectum and large bowels, with hæmorrhages in the latter; the intestines were full of mucous only. Stuttgart disease is distinguished from distemper in that the outstanding features are ulceration and necrosis of tongue, acute enteritis, higher mortality (60 per cent. to 80 per cent.), normal temperature, no ocular or nasal discharges, no exanthema or pulmonary symptoms. The disease runs an acute course, and is rarely seen.

* Presented to the Central V.S.

### Clinical Observations of Rabies.

By J. O. Powley, M.R.C.V.S., Sutton Coldfield.

Case I.—*Subject.*—An even-tempered liver and white field spaniel (male), about eight years old.

*History.*—On the 20th September this animal was showing a tendency to snap at the attendant, was placed in a wired-in tennis court, from which he repeatedly escaped, so he was eventually confined in a kennel, after an unsuccessful attempt to muzzle him. On the 22nd a veterinary surgeon was consulted, as the dog was becoming unmanageable, and tearing

up the woodwork of the kennel. I saw the dog on the 23rd, and had him removed to an observation kennel, where the following symptoms were noted.

*Symptoms.*—The manner was strange, and the animal most vicious, attacking with great fury any objects pushed into the kennel. Very restless, continually lying down, getting up again, and walking up and down the kennel looking for a way of escape. Towards evening, noticed to be biting himself round the anus, and plucking out quantities of hair from the thighs with his teeth, so that on the morning of the 24th the kennel was littered with hair. The facial expression was now becoming most anxious, eyes bloodshot, with the membrana covering the lower third of the eye. Inco-ordination of movement showing slightly in the hind quarters, with a side to side reel when walking. There was now an anxious, tucked-up appearance with tenesmus, and the passage of small quantities of semi-solid, very dark coloured, bile-stained fæces. Fury still most pronounced, but abating, and by mid-day inco-ordination was most marked, the animal staggering from side to side in the walk. Paralysis was progressing very rapidly, and by 4 p.m. there was great difficulty in rising, death taking place during the night.

*Duration.*—20th—25th, approximately 5 days.

*Post-mortem.*—Stomach contained a large quantity of hair, but no food stuffs. The mucous membrane contained three small sub-mucous extravasations of blood. The mucous membrane round the pyloric end of the stomach was swollen and œdematous, and the rugæ of the stomach were hæmorrhagic, and coated with bile stained mucus. The mucous membrane of the intestines was coated throughout with bile-stained, frothy mucus. The spleen was enlarged and congested, and contained several small elevated nodules on its surface about the size of a split pea, showing on section a white glistening centre surrounded by a hæmorrhagic zone. The hind quarters showed evidences of the plucking of hair seen during life.

Case II.—*Subject.*—Fox terrier (male), about two years old.

*Symptoms.*—On the 17th October owner said the dog was quite well and eating, but on the morning, appeared ill, and had what owner described as a glassy look in the eye. The throat seemed to be sore, the dog apparently being choked, and owner thought there was a bone in the throat. Medicine was given, after which the dog appeared drowsy and dejected. On the evening of the 19th the jaw was slightly dropped, and there was partial loss of control in the hind limbs. Micturition was performed in the sitting posture, and the dog attempted to drink the urine after micturating. I saw the dog on the evening of the 19th, when there was profuse salivation, dropped jaw, and the tongue congested and swollen, and hanging from the mouth. The pupils were dilated, inco-ordination of movement very pronounced, the flanks tucked up, and altogether the animal had a most miserable, pathetic appearance. Death took place on the morning of the 20th. During the whole of the illness there was never any attempt at biting, and the poor brute was sensible to the last.

*Duration.*—18th—20th. Approximately two days.

*Post-mortem.*—Stomach contained a small amount of mucus and a few hairs, the mucous membrane being slightly congested. The intestines showed a few isolated areas of congestion only. The rectum contained fæcal matter mixed with hair.

# Association Reports.

## Central Veterinary Society.

A general meeting of the Society was held at 10 Red Lion Square, on Thursday, December 1st, Mr. G. H. Livesey, President, occupying the chair.

The following Fellows signed the attendance book: Major-General Sir L. J. Blenkinsop, Lt.-Colonels H. S. Mosely and A. Olver, Majors P. W. Dayer Smith, F. Hobday, W. S. Mulvey, Capt. M. Kirby, Professors E. B. Reynolds and G. H. Wooldridge, Messrs. W. S. King, A. E. Willett, J. W. McIntosh, W. N. Thompson, H. J. Parkin, W. Perryman, E. L. Stroud, S. H. Slocock, R. J. Foreman, James Rowe, H. King, R. Bryden, H. Allen, H. C. P. King, J. C. Coleman, J. Bell, J. F. Macdonald, A. Cornish-Bowden, A. L. Wilson, T. J. Bosworth, G. W. Lucking, and Hugh A. MacCormack, Hon. Secretary. *Visitors*: Messrs. F. E. Heath and W. H. Brown.

The minutes of the July meeting were taken as read and signed.

Letters regretting inability to be present were received from Mr. G. P. Male, Mr. J. Willett, Major Duncan, H. D. Jones, F. W. Willett and Major P. J. Simpson. A letter was also received from Colonel Meuleman, Belgium, thanking the Society for electing him Honorary Fellow.

A letter was read from the office of the Malcolm Memorial Fund, asking the Society to subscribe for the purpose of educating the children of the late Mr. Malcolm.

The President said that the Council that evening had decided that the Society should subscribe to the fund an amount to be decided at the next Council meeting.

The Secretary said that at the July meeting he was requested to write to Mr. Cunningham respecting his resignation. He had done so, but had not received a reply. He had also had a resignation from Major Swanston, who said he was seldom in London, and was unable to attend the meetings. There was also a circular letter from the National.

Mr. McIntosh proposed that the resignations of the two gentlemen referred to be accepted with regret.

Major Mulvey seconded the motion, which was carried.

The President suggested that, with regard to the letter from the National Veterinary Medical Association, the matter should be left in the hands of the Council to be put into form and to make recommendations in conformity with the latter as far as possible.

This was agreed to.

Captain Hamilton Kirk exhibited two morbid specimens—subjects of distemper and Stuttgart diseases respectively. [*See* clinical column.—Ed.]

The President, in thanking Mr. Kirk for his specimens, said there was one interesting point about the case of Stuttgart's disease, and that was that the ulceration was practically localised to one part, and did not run, as frequently seen, all round the edge of the tongue.

### Election and Nomination of Fellows.

The following gentlemen were unanimously elected Fellows of the Society:—Mr. T. H. Tranter, M.R.C.V.S., 30 High Street, Beckenham; Major A. J. Williams, F.R.C.V.S., D.S.O., R.A.V.C., Royal Military College, Camberley; Captain C. J. Lawrence, O.B.E., M.R.C.V.S., R.A.V.C., and Major T. G. Heatley, O.B.E., M.R.C.V.S., Woodbridge, Suffolk.

Major-General W. W. Smith, C.B., C.M.G., D.S.O., Director-General A.V.S., was nominated for Fellowship, and will come up for election at the next meeting.

### Presidential Address.

The President then delivered the following Presidential Address:—

Gentlemen, there is nothing in the rules which enforces an address from the President, but it is a custom, and I suppose we must abide by old customs. I had intended speaking to-night on what, to me, is one of the most interesting parts of our work, and that is the welfare of the veterinary profession itself, particularly as it is affected by the doings of our governing body. I had hoped to speak to you on the constitution of the Royal College of Veterinary Surgeons and its activities, and how we could strengthen the College, but you will all recognise that the College at the present moment is passing through an exceptionally critical time, and at such a time, when we are faced with the bitterest opposition outside our profession and being attacked on all sides, it is not expedient for any individual to pass criticisms which might possibly be used against us. More particularly is this the case, I think, where the individual holds some official position. I have therefore changed the nature of my address; but, this at least I must say, Mr. Bullock has drawn a matter very urgently to my attention, namely, that if we are to support our College, we must keep the College in funds. He tells me that at the present time, out of about 2,800 practitioners in the country, there are still over 250 who have not paid their annual fee for 1921, and if you can use your influence in any way to see that those fees are paid, you will be helping the College in a most practical manner.

If we as a profession are to take our proper place in the estimation of the public, we must move with the times and keep ourselves, if possible, ahead of public opinion. We are making great strides, both in research and in clinical study, but in one thing at least I think we are not keeping pace with modern civilisation. We are lagging behind when we should be giving a lead to the whole world. I refer to our attitude towards our patients and to animals generally. It has taken five years of war to disprove the German maxim that "might is right," and applying the moral of the war to our own work, we ought to be able to devise some means of gaining the object we have in view without having to rely upon force or the infliction of suffering or pain. A hundred years ago Africans were sold as slaves in England and America, and their owners looked upon them as animals only, and treated them as such. Men were worked to the limit of their capacity by means of the whip; many women were kept for breeding purposes only, so that more slaves might grow up on the estates. Untold horrors were perpetrated in order to force these poor creatures to earn more for their masters. The abolition of slavery eventually came about because civilisation revolted from *men* being treated like *mere animals*. I would draw your particular attention to the fact that while it shuddered at the thought of men being treated in this way, it was taken for granted that animals might quite properly be treated with brutality and no protest raised. But while public opinion has abolished the slavery of man, it has not during the last 100 years been aroused to such an extent that the treatment of animals has improved in anything like the same way. I do not of course mean to infer that animals should be treated as human beings; but our very words and expressions in common use exemplify the attitude towards animals to which we have been accustomed all our lives. For instance, do we not "*drive*" horses? We hear a woman say in the police court, "If I had been an animal he could not have treated me worse." If a man feels particularly ill used, he will say he has been "treated like a dog," or "has not a dog's chance." The Englishman has a name for fondness for animals, but he does not realise that they can suffer or that they can be treated better than they are treated. Even in these enlightened days of education it is the custom, established by long use, to force animals by means of punishment and pain to do as man wishes. He can conceive of no other method. Watch cattle being loaded and unloaded on ships. Watch cattle and sheep going to or coming from market; hear the shouting; hear the sticks beating, and see the tails twisted, and ask yourselves if this kind of thing is anything for us to feel proud of Then, again, look at some of our horses; they are, generally speaking, probably better cared for than in any other country, but when aged and worn they fall into the hands of the rougher sort of men, who treat them badly because they are of such small value. Some of the cab horses, laundry horses and small greengrocers' horses are a disgrace to us and a blemish on our streets. The R.S.P.C.A. does not commend itself to me, and I disagree with many of its methods, but amongst this class of horse I think it has done some good work. But in a civilised and educated nation like ours there ought to be no need of a S.P.C.A. I think our profession (one of whose aims is the alleviation of suffering) should take a firm stand on this question,

and both by precept and example give a lead, both to our own countrymen and to the whole world. We can do so much and so much responsibility devolves upon us. If we are rough with our patients, we set an example only too readily followed by those who look after them. A V.S. naturally would not be seen riding or driving a lame horse; it would look so bad. Is it not a pity he cannot instil a little of the same feeling into some of his clients? From an ethical point of view it is not proper or fitting that any horse that is lame should be put to work merely *for the benefit of his owner*. A little more thought for the patient, a little more punctiliousness, might go a long way to eliminate some of the lame horses that are daily to be seen at work on the road, and also prevent some of those disputes in Court, which I think we are all agreed do not redound to our credit.

There is one instrument in frequent use in the stable which it would be to our credit to abolish, and that is the twitch. No one will seriously deny that the use of the twitch is painful, and to some horses very painful. I admit that in the present state of our knowledge its use may sometimes be a necessity. But in modern days, and with modern science to assist, is it beyond the wit of man to devise some better means of restraint, less painful, equally efficient, and which can be readily used by stablemen? The man who can introduce such a method or instrument would be a real benefactor. Time only permits me to touch very lightly on this important subject, but no doubt there are many things in horse, cattle, and dog practice which will suggest themselves to you which you know might be greatly improved for the benefit of the patient. I have already spoken to this Society on the subject of handling cats and dogs, and suggested methods which need no force and the infliction of no pain or fear. Can we not spare a little of our time and thought from scientific research and clinical study to do some research work into methods and means to prevent the pain and suffering often heedlessly and needlessly imposed upon our patients and other animals? A great deal can be done by our schools and by those practitioners who take pupils. A special responsibility is upon them, and many do their best to discharge that responsibility by precept and example, but a general responsibility lies upon all of us, and common humanity cries out to us to improve our methods and to keep pace with the higher calls of our civilisation.

I commend this subject to the Fellows of the Central in the hope that they may give it more than a passing thought, and that they may lead the way in matters of reform which will improve our methods of handling patients and prevent any suffering which can possibly be avoided.

As this is the only occasion I shall have of formally addressing you, I wish now to ask everyone of you to give me all the support you can during the coming months, to attend regularly, and to be punctual, so that this may be a particularly successful session. Amongst many interesting subjects you will be asked to consider you will have the question of a *rapprochement* with the medical profession brought before you on more than one occasion, and I ask you to support it wholeheartedly, and let us get things on a businesslike footing for our mutual benefit. You will also have a very important subject to discuss shortly, namely, the humane slaughter of animals, which will no doubt come up again before Parliament. I ask you to prepare beforehand to discuss this thoroughly, so that a clear concensus of opinion may be found, as no doubt our opinion will be studied and quoted in the future. It is a subject which we can speak with more authority than those laymen whose opinion is too frequently sought by those in authority. Some other excellent papers are promised, and I hope you will also have the pleasure of hearing some notable speakers from outside the Society, which I hope will add interest to our meetings.

Major-General Sir J. L. BLENKINSOP proposed a hearty vote of thanks to the President for his address, which covered a subject in which everyone was keenly interested.

Major F. HOBDAY seconded the motion, which was carried with acclamation.

*(To be continued.)*

## Mid-West and South Wales Veterinary Association.

DISCUSSION ON WHOLE-TIME SALARIES.

*(Continued).*

Mr. HALL (Barry) said he thought there was a wider field than the whole-time official, and the remarks of the author of the paper could also be applied to the part-time official. Let them take the case of a part-time official working under the Diseases of Animals Act. It was a well-known fact that they were paid a fee of a guinea for the first visit. If they were in doubt as to whether swine fever existed or not, they were asked to go again, simply for the mileage. Was it fair or just to ask them to make a subsequent visit, and perhaps a post-mortem examination, simply for the sake of going there? He thought they should try and teach them from the bottom of the ladder before they expected to benefit those at the top of the ladder. Whole-time jobs were not very numerous, and it was because of the fact that there were so very few whole-time jobs, and the supply was greater than the demand, that men were so prone to take low salaries. When councils and authorities were educated up to the fact that whole-time officials were absolutely necessary, they could demand from them an adequate salary for the position, but until they educated the authorities to see that they were necessary, they would be told that lots of men could be obtained at a small salary.

Mr. E. P. EVANS (Cardiff) said if they made their services worth very little, and some of them were under that impression, he was sorry to say they undercut others. When they had men who were ready to deal with a situation or accept an appointment, or do any professional work at an unremunerative fee, then it was time for them to pull together as a profession and be united. He thought the fault lay a great deal at their own door. There was room for improvement in that respect, and he thought if, as a profession, they were thoroughly united, and there was no undercutting or small fees so as to get the work, but if they all united together in securing a remuneration that would be worthy of the profession, they would make a big advance. Professor Hobday had put the position very nicely in saying that the public judged them according to the position they occupied, and the public also judged them according to the fees they were charging. If they charged a small fee, which was unremunerative, a man did not think any more of them, but rather the reverse.

If they charged the professional fee they were quite entitled to, the public would look up to them and have a better opinion of their professional ability.

Mr. COLEMAN (Swindon) said the paper of Professor Hobday was one of the most interesting he had ever heard. With regard to the remuneration of the profession as a whole, he thought it was inadequate, and as some of the former speakers had said, it was largely due to their own fault, but it was not altogether so. They were rather inclined to hide themselves under a bushel. They took no part in propaganda work, which he thought was very necessary, more especially in the direction of the duties they did in the way of milk, and the inspection of herds and cows and the sources of milk supply. If they could only educate the public to the fact that they were the only competent authorities to do that work, he thought they would soon obtain larger salaries. They must remember that the people who gave them their salaries were more or less ignorant of the capabilities of the man they were going to pay, and consequently they were not in a position to give them the salary they were worth because these people did not know what they were worth. It was up to themselves to educate the public individually and point out what they got by a proper inspection of milk and that sort of thing. Some of these people did not know what members of the profession were worth. With regard to the whole-time man, he could see a very serious blow coming to some of the older members of the profession. He had heard it asked, "Where would the new members be absorbed into the profession?" He did not know whether that had been exploded yet, but at the time it was suggested they would be absorbed in new appointments that would accrue under the new Ministry of Health. Now, if that were so, if these whole-time men, who were going to take the county veterinary inspectorships and so on, were going to entirely usurp the work of part-time inspectors, it was a sorry time for the older men. There were a great many men amongst them who had kept up-to-date, who were perfectly capable men and perfectly reliable, while among the younger men there were a few perhaps who were black sheep, but he certainly thought it was up to those members who were conscientious in their duties to show up those who were guilty of irregular practices, and get them out of it, and let the public see who they were. If the whole-time man usurped entirely the work of the part-time man, he was afraid it would be a sorry time for the part-time inspector with the increased duties under the Tuberculosis Order, inspection of meat and all those kinds of things; all the increased work that had been caused by taking away their most profitable work. There was a good deal that might be said, and he thanked Professor Hobday for his very interesting paper.

Mr. ADAMS said the trouble was omitting to put their scale of fees before a member. No gentleman had spoken of their scale of fees, and now they were there together, he would like to say that as a minimum, he thought they were a fair standard of what they ought to get. It was up to everyone to get more than the standard scale if they could obtain it, but the minimum they had fixed, and if they were loyal to their Association and loyal to themselves they would get that minimum. If Professor Hobday had an opportunity of perusing that scale, he might come to the same conclusion. If a member of the Association could become an apostle in the country to obtain new members, he thought that would cover the whole ground—that once they became a member of that Association they were bound by those fees.

A member: What is the penalty, sir?

The CHAIRMAN said, arising out of Mr. Adams' remarks he should like to make an allusion if they would allow him, and that was that Professor Hobday's paper had been on the official veterinary surgeon as against the private practitioner. Now, leading up from that point—everyone knew where the shoe that he wore pinched—and the point as it occurred to him was the remuneration offered by county councils under the Contagious Diseases of Animals Act. He was sure Mr. Adams would agree with him, that the fees suggested by the National Society of Inspectors of Great Britain and Ireland were up to their idea of what they should be, but they were totally incompatible and out of date with the fees offered by the various county councils in England. It was notorious, and he had taken some trouble in going through them in seeing what a great variation there was. For some work done one county council might offer a fee of two guineas, which was at the top of the scale. Another county council for the same amount of work suggested a fee of 5s. There was such a great disparity between those two extremes that either one must be magnificent generosity or the other infinite meanness. He could give them an illustration of a case in point he had only the other day. The case was what appeared to be at first sight a very uncommon form of scabies (I mean sarcoptic) in sheep, affecting the head and skin, parts of the body, absence of wool, and the clinical data here so very pronounced that he was in a quandary; so much so that he took the trouble of making in all 24 microscopic slides before he could satisfy himself that he was not dealing with parasitic scab. That particular flock of sheep was nine miles away from his surgery, one mile of which he had to walk because it was inaccessible by motor—in all, an 18-mile journey. He took one-and-a-half to two hours examining those slides, and the remuneration that he received from the county council for the amount of work, which took practically five hours altogether, was the huge sum of 16s. He thought it should go forth from this Association in no unmeasured terms that our national protective body should be asked to emulate the examples that Professor Hobday had mentioned in his paper of the British Medical Association, and discuss the question with all these county council bodies who offered such paltry remuneration, and when they realised that they (the veterinary profession) had a powerful body at their backs supporting them through thick and thin, he was sure that eventually they would fall into line. That would do much more good than any individual effort that they could inculcate in their own immediate circle.

Mr. BROWN (Pontypridd) said he had been greatly interested in the paper, and he would like to point out with regard to what Mr. Scott had said, that their fees had been raised 100 per cent. since they got into touch with the county council.

Mr. ADAMS said, in reference to the remarks of the Chairman, he might observe that in August, 1920, he attended a meeting of the National Association of Veterinary Inspectors and the question of fees was discussed, and he, representing the veterinary inspectors for the county of Gloucester, had tried to get what he could for them. In August, 1920, at this meeting, a committee was appointed who were to formulate a scale of charges for county councils and approach the County Councils Association, so that they might be uniform throughout England. He wrote to the president of that Association in July of this year asking what the result of the committee had been. He replied that the matter was very difficult, and had led to a lot of discussion, but he hoped to be in a position shortly to say what had been done. Now the National Association of Veterinary Inspectors had appointed a committee to discuss and arrange, and he thought Yorkshire was the county which was taken as the standard.

Mr. COLEMAN asked whether he might give them the information Mr. Adams asked for. He was not on this committee, but he was informed that the committee arranged to apply to the County Councils Association and get at the councils through that body, which they had done. The President had written four or five letters, but he had not been able to get any satisfactory reply yet. He had worked very hard to get at the County Councils Association through its representatives on the county council, but he had not succeeded yet. Whether they could pass any resolution to stir the matter up in any way he did not know, but he thought it was desired, if possible, to keep this question in the hands, in the first place, of the Association of Inspectors. He did not know for what reason. He wanted to make the business

national in the first place, but there seemed to be a great deal of objection to it, and the inspectors only would do it more thoroughly.

The CHAIRMAN said his point in mentioning the Society of Inspectors at all was that the fees they laid down were so satisfactory that they would be very pleased to have them.

Mr. COLEMAN said the fees allowed in a case of anthrax recently were 5s., and the cost of sending a sample to the Board of Agriculture amounting to 1s. 3d. came out of it.

Mr. ADAMS said he attended a meeting of the Gloucester Council recently, and they agreed to raise one particular fee. He stated that when the County Councils Association had come to some conclusion they would adopt what was going to be the minimum throughout England. Whether the fault lay on the County Councils Association or the representatives of the Veterinary Inspectors he did not know.

The CHAIRMAN: You might get them to do likewise in Somerset.

Mr. ADAMS: I think that is better left to yourself.

Mr. WATSON said he thanked Mr. Hobday for his paper, with which he could only agree, and he had not much to say on it. but a friend of his who was doing occasional work for the Board of Agriculture in connection with swine fever told him he was paid at the rate of 4½d. per mile. The matter was in his own hands. Why did he do it ?

Mr. PERRY said the lowest was 8d. now, each way.

The CHAIRMAN: 1s. 6d., practically.

Mr. GARDNER said he would like to offer a few observations, more especially with reference to colonial and municipal appointments. Perhaps he was in a position to speak freely with regard to colonial appointments, and he rather thought if they could induce young graduates to apply for information before accepting positions, it would be doing very good work for the profession. He thought by their social standing they were judged, and as their social standing rose, he thought their salaries would rise. These colonial appointments were very distinct indeed, and they were placed in a certain position when they went abroad. As he said, they ranked first, second, or third, or downwards, and the veterinary—he could speak from experience—was usually at the bottom. He did not say it was so in every case. There might be one or two cases in which they would find the veterinary surgeon, after a great deal of time and worry, was in the position they hoped for, and had been appointed what was called chief veterinary surgeon. In that respect he was entitled to a certain mark or position at any function he attended. A first-class official usually wore three rows of braid on his arm and three buttons, a second-class official two rows of braid and two buttons, a third-class official wore one button, and the veterinary surgeon was not worth a button. (Laughter.) Now that had been his experience, and by the position there, more so than at home ; by their official standing so they were judged. They were not always working amongst Europeans, and more especially among coloured races they could look upon themselves as not worth a button, and they were judged accordingly. If there was something formulated where young graduates would come forward and ask for information—I am thinking of accepting an appointment at so-and-so. Can you give me any information ? The salary is so-and-so ; can you tell me anything about living conditions and cost of living, my social standing, and so on—he thought it would be a very excellent thing. He hoped Professor Hobday was leading to something useful, and that something which would be valuable would follow out of it.

Professor HOBDAY, in reply, remarked that from what the speakers had said, they would agree with him that there was a necessity for ventilating a subject of this kind. He had never known, as he said before, so serious a time as the present, and he was in communication with a great many of their younger graduates, old students, old friends, and others whom he saw in getting about the country—he had never known a time in which the young graduate had been so undecided as to what to expect or what to do. Unfortunately, as they knew, many of their younger men went straight from college into army service during the great war. They had three, four or five years of it, or perhaps some of them only had two of it. At any rate, they never knew anything else but army life, and at the end of the war, of necessity, they had to leave it. They had then become older, and away from the receptive age. At the present time numbers of them were stranded, and they felt that they were not competent to go into general practice, and that the only thing open to them was to look after a billet. What had the profession got to offer them ? Practically nothing.

Let them compare themselves with the medical profession and any other profession, but particularly the medical profession. Of course we always compare ourselves with the medical profession, because it is somewhat similar to ourselves. The medical profession had heaps of whole-time appointments, but veterinary whole-time openings, compared with the men who were seeking them, were few, and if a man's health was broken through service abroad, and it was necessary that he stayed in this country, the billets open to him with a living wage attached to them were practically *nil*, unless he had gone through some training which particularly fitted him for any special billet which was advertised. Take, for example, those two billets which were at the present moment advertised in the *Record*—£800 a year for a graduate in Animal Disease Research work. Naturally for these a man must be properly trained, and those who were successful in getting them would have billets at remuneration to commence with which gave quite a satisfactory living wage. When they came to starting men of from 23 to 32 years of age at the paltry, insufficient, salary of £200 a year, increasing by £10 a year up to £300, at the present time—even if they had a temporary war bonus—(the latter was not going to last for ever and would be snipped off presently)—how could they live and take their proper social position with the present-day rent and taxes and food prices ?—a man who might have a wife and family to keep and a social position as a professional mean to be maintained. It was not even genteel poverty, and it was an insult to their profession that Government billets of this kind were being put in front of them. The remedy, as several had said, lay with themselves, but, unfortunately, there were men amongst them who could not afford to miss even these billets. They were bound to take them if they could get them, simply because there was nothing else between them and starvation. He had prepared a paper in connection with billets abroad, because he had there a great deal of correspondence with men abroad, and the same thing, although their salaries seemed comparatively good on paper, had arisen in some instances with them. They must live as "white men" out there, and the speaker in the meeting who had been abroad would confirm him in saying that £300 or £400 a year billets were not sufficient for a professional man. They must live similarly to the medical men and other white officials in the country. A move had been made with regard to billets abroad. A Commission had been appointed, the question had been gone into, and some suggestions had been made for the increase of certain salaries. That question had thus been officially discussed ; but at home the question had not been dealt with as it should be, and it rested entirely with themselves to remedy it. As someone said, they could boycott these appointments if men could afford to boycott them; but, unfortunately, they were a poor profession, and when they had had their professional education given to them by their parents and guardians, they had to strike out for themselves at once and earn their own livings, and if they wished for whole-time appointments they had to take whatever appointments came along, unless they could afford to wait for something which absolutely appealed to them. It was a subject on which he proposed to bring forward a resolution at the next meeting to be sent to the National Veterinary Association Council. It could not be done now, as it had not been on the agenda, but the

resolution might read something like this: "That the Council of the National V.M.A. shall select a committee to do as the Council of the British Medical Association has done, to advise young graduates as to the condition of things in Great Britain and any particular part of the world where they wish to go; and to make representations to our governing bodies wherever it is considered that the salaries which are offered are not adequate remuneration as a return for the time and work given to, and the amount of money which has been spent on, the education of a veterinary surgeon." (Applause.)

# Notes and News.

## Epping Practitioner's Tragic Death.

At an inquest held at Epping recently on the body of Mr. George Upton, M.R.C.V.S., of Beulah Lodge, Epping, aged 52, who was run over by a motor-lorry while cycling, evidence was given that his cycle had no rear light. The coroner said that although the regulation had been withdrawn, he thought cyclists should still carry rear lights in their own interests. The jury, in returning a verdict of "accidental death," exonerated the driver, who said he did not see the cyclist, from blame. They agreed with the coroner as to the cycle rear lights, and asked him to make representations to the proper quarters. They were satisfied that the absence of a rear light caused the accident.

## Foot-and-Mouth Disease Restrictions Withdrawn.

The Ministry of Agriculture and Fisheries announces that an Order has been issued withdrawing as from the 19th December all the remaining general restrictions imposed in connection with the outbreak of foot-and-mouth disease which occurred at Underriver, Sevenoaks, Kent, on the 24th November. Disease was confined to the premises upon which its existence was first confirmed, and no extension of disease has taken place.

# Correspondence.

**Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.**

**All correspondence must bear the name and address of the contributor for publication.**

**The Editor does not hold himself responsible for the opinions of his correspondents.**

## A Canine Problem.

Sir,—I have read with much interest Mr. Duncan's letter, and Mr. Lancaster's reply thereto, and have come to the conclusion that the malady as described by Mr. Duncan was distemper. The versatility of this disease must be borne in mind, and none of the symptoms occurring in the case observed by Mr. Duncan are foreign to those pertaining to distemper, whilst in my opinion the presence of gangrenous pneumonia is as common in distemper as it is in Stuttgart's Disease (or more so) and therefore is not characteristic.

In Mr. Duncan's case, the bladder was found greatly distended, which is quite common in distemper, but very rare in Stuttgart; the kidneys in both affections are seldom diseased, and if these organs were found cirrhotic in Mr. Duncan's case, it must be remembered that dogs which have attained the age of eight years are frequently found on *post mortem* to be subjects of cirrhosis or other kidney disease, quite unconnected with either distemper or Stuttgart. The direct cause of death in this instance appears to be toxæmia, due to the absorption of poisons from the thoracic cavity, and the primary cause, most likely, distemper. The *post mortem* lesions described were almost precisely the same as those I observed in a recent case of distemper which, during life, had manifested all the unmistakable signs of this malady spread over eight days. The dog Mr. Duncan treated had evidently been a subject of catarrhal pneumonia prior to his first examination on October 11th, and was on that date undoubtedly suffering from gangrenous pneumonia; and it is not at all uncommon for a dog so affected to exhibit little or no sign during life, as this same fact has been remarked upon frequently by Dr. McGowan and other observers. Mr. Duncan asks whether the offensive breath was due to the septic pleuro-pneumonia. If the foul breath existed on October 11th, I would say decidedly "yes"; but if he refers to the bad breath noticed in the previous July, I would say "no," since animals could rarely live with gangrenous pneumonia from July to October.

On the question of Stuttgart disease, I must disagree with several of Mr. Lancaster's statements, particularly when he states that "after four or five days, a gangrenous pneumonia is developed in *all* cases." Personally I have not met this condition in any case of Stuttgart, and have found no allusion to it in text books. Further, he is of opinion that high temperatures may be met with in the early stages, though so far as I know and have always proved in practice, a normal temperature is maintained throughout, becoming at last, subnormal.

Mr. Lancaster makes no mention anywhere of the oral lesions (necrosis and gangrene of the tongue, &c.), which are so characteristic and diagnostic of Stuttgart disease, occurring as they do in the vast majority of cases. He also speaks of treating *numbers of dogs* with distemper bacteria and medicinal agents, all of which "are doing well." In view of the extremely high mortality connected with Stuttgart (80 per cent. to 90 per cent.), I would ask Mr. Lancaster whether there might be any possibility that some of his cases are not Stuttgart at all, but are in reality an acute type of distemper? Mr. Lancaster says on page 997 that "the best treatment was Parke Davis's *bacterin*," whereas on the next page he tells us "it was only after using the *serum* that he obtained any success." Which did he use? It is very interesting to learn of the outbreak of Stuttgart at Burnley, since I had always viewed the disease as of comparatively rare occurrence, and as one which is not rapidly or easily communicated from one animal to another (unless they actually lived together), on account of the absence of discharges which could act as a vehicle for the conveyance of the contagium.

Pemberthy and Albrecht failed to convey the disease from one to another experimentally, and numerous other authorities considered the transmission of contagium from the affected direct to the healthy as exceptional.—Yours faithfully, HAMILTON KIRK, M.R.C.V.S., Capt. R.A.V.C., T.F.

67 Wigmore Street, W.1., *December 11th*, 1921.

## Not Coming in Season.

Sir,—In answer to Mr. G. Mayall's letter in your issue of December 10th, 1921, I should like to say that I have paid particular attention to the study of the ovarian function in cattle for the last three years, and can state the general results obtained in the treatment of several hundred cases.

The immediate cause of not coming in season in anatomically healthy cattle is due to the presence of a corpus luteum or corpora lutea, showing little tendency to spontaneous disappearance. This state of affairs, however, is almost invariably due to some kind of uterine irritation, the commonest causes being uterine catarrh and pyometra. A mummified or a macerated fœtus

will bring about the same result. In some, the source of irritation is obscure, and these cases are generally the more successful to treat from the subsequent breeding point of view. It naturally follows from the above, that the administration of corpus luteum extract is not likely to be attended with success. But the handling of the ovaries is another matter and generally succeeds in bringing about œstrum in the majority of cases, not, however, by massage, but by squeezing out the offending corpus luteum per rectum or vaginam. As a result of this operation, a mummified fœtus is aborted; a macerated fœtus unfortunately, is generally fixed by the awkward disposition of the bare bones in the uterine horn. These latter cases, anyway, are often hopeless, as bilateral pyosalpinx is a usual accompaniment. This also applies to old standing pyometra.

When œstrum has been induced, copulation is not likely to be attended with success until the interior of the womb has been cleansed; but the dilatation of the cervix that takes place during the induced "period" materially aids the difficult operation of safely obtaining a passage through this organ. Messrs. Arnolds made two long forceps to my design with which to fix the cervix, after which gentle traction is sufficient to bring the structure between the lips of the vulva, where one can proceed to examine any pathological condition present, such as cervicitis. The most useful instrument to use in trying to find the awkward passage of the cervix in my opinion is a Bozeman catheter. With patience, carefully avoiding force, one can generally succeed in getting into the body of the womb. Flushing with weak Lugol's solution can then be carried out by attaching an ordinary rubber enema pump to the catheter. If there is any reason to think that a discharge is accumulating at the far end of the uterus, it is sometimes necessary to use a long rubber catheter for the flushing, taking care to syphon off all liquids before removing the tube. Massage per rectum will aid this procedure.

One might mention here that cleansing of the womb in this way will generally bring about the disappearance of the corpus luteum without ever touching the ovaries, but it certainly takes longer and the passage of the cervix is not so easy.

A word of advice is necessary before advocating interferance with the ovaries, *i.e.*, make sure that the cow is not in calf, whatever may be the history given by the owner or herdsman, as expression of the corpus luteum during the first three months of pregnancy will invariably cause an abortion. Also do not try to exert too much pressure on a deep seated corpus luteum per rectum, but rather bring it up to the side of the vagina and there exert the necessary force with the other hand through the vaginal wall.

Yohimbine by stimulating the spinal centres connected with the genitalia will certainly bring about sexual excitement in a number of cases, but I have not observed ovulation to take place as a result of its use.

Unfortunately, in many cases, clients leave the cows a long time before seeking professional advice, with the result that incurable complications have supervened. Severe changes in the uterine wall, hydro and pyo-salpinx, are examples of such complications easily diagnosed per rectum.—Yours truly, LESLIE P. PUGH, B.Sc., F.R.C.V.S.

Sevenoaks, *December 10th*, 1921.

## Army Veterinary Service.

LONDON GAZETTE. WAR OFFICE. REGULAR FORCES.

December 13th.—The following temp. Qrmrs. and Capts. relinquish their commissions on completion of service, and retain their rank :—H. Barrs (April 2nd, 1919); C. Cooke (August 21st, 1919).

## Diseases of Animals Acts, 1894 to 1914. Summary of Returns.

| Period. | | Rabies. Cases Confirmed. Dogs. | Rabies. Cases Confirmed. Other Animals. | Anthrax. Outbreaks confirmed. | Anthrax. Animals attacked. | Foot-and-Mouth Disease. Outbreaks confirmed. | Foot-and-Mouth Disease. Animals slaughtered as diseased or exposed to infection. | Glanders (including Farcy).* Outbreaks reported by the Local Authorities. | Glanders (including Farcy).* Animals attacked. | Parasitic Mange. Outbreaks reported by the Local Authorities. | Parasitic Mange. Animals attacked. | Sheep Scab. Outbreaks reported by the Local Authorities. | Swine Fever. Outbreaks confirmed. | Swine Fever. Swine slaughtered as diseased or exposed to infection |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GT. BRITAIN. | | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. |
| Week ended 10th December, 1921 | | ... | ... | 13 | 16 | ... | ... | ... | ... | 17 | 25 | 43 | 28 | 7 |
| Corresponding Week in | 1920 | 3 | ... | 19 | 27 | ... | 405 | ... | ... | 43 | 61 | 26 | 20 | 3 |
| | 1919 | 2 | ... | 6 | 7 | 1 | 78 | 1 | 1 | 111 | 185 | 30 | 35 | 14 |
| | 1918 | 4 | 6 | 2 | 2 | ... | ... | 2 | 4 | 118 | 220 | 20 | 32 | 13 |
| Total for 50 weeks, 1921 ... | | 22 | 1 | 479 | 609 | 44 | 3085 | 11 | 42 | 1959 | 2959 | 578 | 1206 | 442 |
| Corresponding period in | 1920 | 37 | ... | 436 | 522 | 80 | 11203 | 15 | 25 | 3465 | 5659 | 446 | 1763 | 698 |
| | 1919 | 150 | 5 | 223 | 294 | 71 | 3144 | 23 | 59 | 4759 | 9357 | 380 | 2235 | 1015 |
| | 1918 | 90 | 9 | 234 | 270 | 3 | 40 | 33 | 97 | 4239 | 7891 | 337 | 1357 | 544 |

NOTE.—The figures for the current year are approximate only. *Excluding outbreaks in Army horses.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRELAND. | | | | | | | | | | Outbreaks | | | | |
| Week ended 10th December, 1921 | | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | 3 | | | |
| Corresponding Week in | 1920 ... | ... | ... | ... | ... | ... | ... | ... | 12 | 1 | 3 | | | |
| | 1919 ... | ... | ... | ... | ... | ... | ... | 1 | 11 | 1 | 6 | | | |
| | 1918 ... | ... | ... | ... | ... | ... | ... | 1 | 14 | ... | ... | | | |
| Total for 50 weeks, 1921 ... ... ... | | 1 | 1 | 7 | 77 | ... | ... | 75 | 259 | 112 | 133 | | | |
| Corresponding period in | 1920 ... | 1 | 1 | ... | ... | 1 | 3 | 92 | 329 | 15 | 44 | | | |
| | 1919 ... | ... | ... | ... | ... | 1 | 1 | 137 | 277 | 33 | 102 | | | |
| | 1918 ... | 2 | 2 | ... | ... | ... | ... | 96 | 324 | 29 | 129 | | | |

NOTE.—The figures for the current year are approximate only.